

storm prevailed at Laconia, Ind., from 3 to 4 p. m., damaging fruit and grain. A destructive hailstorm was reported 6 miles north of Forestburg, Tex.

**27th.**—Several houses were struck by lightning at Roxbury, Mass. Damage was caused by heavy rain at Water Valley, Miss. Destructive thunder and hail storms were reported in North Carolina. A severe thunder and wind storm moved east over Sloan, N. C., at 3.30 p. m. A severe wind and hail storm was reported near Bainbridge, Ga. A thunderstorm, with heavy rain and hail, occurred in the afternoon and evening at Little Rock, Ark. At Macksville, Kans., 5 children were stunned by lightning. A heavy hailstorm was reported at Colorado, Mitchell County, Tex.

**28th.**—Severe wind and rain storms occurred in western Tennessee and Georgia. At Chattanooga, Tenn., a thunder and rain storm began at 8.28 p. m. and continued until the early morning of the 29th; heavy rain washed streets badly and interrupted street car traffic.

**29th.**—Severe storms occurred in the Carolinas, Georgia, Indiana, Lower Michigan, Iowa, South Dakota, and Utah. At Wilmington, N. C., the wind reached a velocity of 40 miles per hour from the northwest in the morning and showers continued until evening; a number of trees were blown down and two small boats were capsized near Wrightsville. The storm was exceptionally severe about Hollands Store, S. C. At that place 3 persons were reported killed and a number injured. Destructive rain, thunder, and hail storms were reported near Trenton and Simpsonville, S. C.

Severe local storms occurred in central and northern Georgia in the early morning, destroying considerable property and injuring a number of persons. At Atlanta, Ga., a severe thunderstorm began shortly after midnight and continued with heavy rain during the early morning of the 29th. A storm moved east in a path 150 yards in width near Box Spring, Ga., at 7 a. m. A destructive rain and hail storm was reported in the afternoon at Logansport, Ind. At Detroit, Mich., a house was struck by lightning. Stock was killed by lightning at Murray, Iowa. A hailstorm was reported 7 miles south of Pleasant Dale, Kans. Stock was reported killed by lightning at Gale, S. Dak. A violent gale of short duration caused considerable damage in Utah. At Salt Lake City, Utah, the wind reached a velocity of 51 miles per hour.

**30th.**—Local storms were reported in New York, Florida, Louisiana, Arkansas, Ohio, Indiana, Missouri, and Nebraska. At Lebanon Springs, N. Y., a barn was struck by lightning

and burned. During a heavy thunder and rain storm at Jupiter, Fla., in the afternoon, the wind reached a velocity of 36 miles per hour from the northeast. Hail destroyed corn and cotton about Farmerville, La. Crops were damaged by hail in Bienville Parish, La. A thunder and hail storm visited Ashdown, Ark., from 3 to 5 p. m.

A cloudburst, with some hail, was reported at Buckner, Ark., at 5.50 p. m. A severe hailstorm occurred near Dallas, Ark., at 3 p. m. A child was killed by lightning near Fort Smith, Ark. At Little Rock, Ark., a thunderstorm, with heavy rain, began 10.55 p. m. and ended the morning of the 31st. The storm was attended by high northwest winds which reached a maximum velocity of 42 miles per hour. Unusually heavy thunder and rain storms visited Hope, Ark., at 4.30 p. m. A violent storm began at Washington, Ark., at 4.45 p. m. and ended at 5.15 p. m., causing loss of life and stock, and destroying property and crops.

A heavy thunder and hail storm damaged corn about Cambridge, Ohio. A church was struck by lightning at Delphi, Ind. A house was struck by lightning at Lebanon, Mo. A severe wind and rain storm damaged fruit, trees, and vines about Glasgow, Mo. At Genoa, Nebr., a heavy rainstorm, with hail, began at 6 p. m., 30th, and ended the early morning of the 31st. Streams and lowlands were flooded.

**31st.**—Local storms were reported in New York, Mississippi, Arkansas, Tennessee, and Kentucky. Heavy rain and hail damaged fruit and vegetation about Addison, N. Y. A severe rain and hail storm visited Holly Springs, Miss. Loss of life and destruction of property were reported at Rosedale, Miss. A tornado moved northeast near University, Miss., in the evening. A funnel-shaped cloud was observed which divided in two parts, one part passing  $\frac{1}{4}$ -mile west and northwest of University, prostrating trees in a path about 200 yards in width. A destructive storm moved northeast near Douglas, Ark., about 2 p. m. At Poplar Grove, Ark., a tornado moved northeast in a path 250 yards in width at 2 p. m., killing 1 person. A thunderstorm, with heavy rain and hail, moved eastward over Forrest, Ark., at 3 p. m. Great damage was caused to property and crops about Lagrange, Ark., by a storm which moved northeast at 3 p. m. Exceptionally heavy rain flooded streams and lowlands about Nunnely and Jackson, Tenn. A thunderstorm, with high wind and heavy rain, caused considerable damage about Franklin, Ky. Several houses were unroofed by high wind at Paducah, Ky. Heavy rain damaged corn about Pauline, Kans.

## INLAND NAVIGATION.

### FLOODS.

The month opened with the Mississippi River high and rising throughout its course. The Ohio, Wabash, and Arkansas rivers were also rising. From Saint Paul, Minn., to Hannibal, Mo., the Mississippi River had risen one foot in two days. At Saint Louis, Mo., the stage of water was 30.4 feet, 0.4 foot above the danger-line, a rise of 3 feet in 2 days. At Cairo, Ill., the Mississippi River had risen 2.7 feet in 2 days (to 44.6 feet), 4.6 feet above the danger-line. The Ohio River had risen 4 feet at Pittsburgh, Pa., 5 feet at Parkersburg, W. Va., and 7 feet at Cincinnati, Ohio, in 2 days. At Cincinnati the water reached the danger-line, 45 feet. The Ohio was rising rapidly at Louisville, Ky., and at Evansville, Ind., a rise of 9 feet in 3 days was reported. Destructive floods were reported in the valley of the Red River of the North. At Little Rock, Ark., the Arkansas River reached a stage of 24.3 feet, 1.3 foot above the danger-line, at 4 p. m. Floods were reported in the smaller streams of Ohio.

On the 2d the Mississippi River reached 13.7 feet at Saint

Paul, Minn., submerging low-lying parts of Saint Paul and Minneapolis. At Saint Louis, Mo., cellars on the river front were flooded, and in east Saint Louis a large warehouse was wrecked. The Ohio River reached a stage of 50.6 feet at 7 a. m. at Cincinnati, a rise of 5.4 feet in 24 hours. Low-lying ground was flooded, and landslides and washouts occurred on the railroads. At Louisville the river passed the danger-line. At Cairo, Ill., the Ohio was about 6 feet above the danger-line and rising rapidly. The Arkansas River reached 25.3 feet at Little Rock about 3 p. m., partially submerging plantations above and below the city. The Red River of the North continued to rise at Saint Vincent, Minn. Rivers and streams continued high in Ohio. Considerable damage was caused about Columbus, Ohio, by the overflow of the Scioto River.

On the 3d the Mississippi River reached 31.5 feet at Saint Louis, Mo., and in the evening began to slowly subside. At Cairo, Ill., the river reached 46.8 feet, 6.8 feet above the danger-line, and unprotected bottom lands in that section were submerged from the overflow from the Ohio and Mississippi

rivers. At Louisville, Ky., the Ohio River rose to 27.4 feet, 3.4 feet above the danger-line. At Little Rock, Ark., the Arkansas River remained nearly stationary at 25.2 feet. Freshets occurred in western New England. The Connecticut River rose rapidly at Hartford, Conn., submerging the lower part of the city. At Brattleboro, Vt., the Connecticut River rose 7 feet in 10 hours, and about Barre, Vt., many bridges were washed away. In Washington County, Vt., the damage by flood was estimated at \$50,000. High water was reported along the Genesee River, N. Y., and in streams in northern Pennsylvania and western Maryland. The James River rose rapidly at Lynchburg, Va., on the 3d and 4th, reaching 14.0 feet at 7.15 p. m., 4th, after which it subsided. The Sciota River fell rapidly at Columbus, Ohio. Streams were high in parts of Tennessee and Arkansas. At Saint Paul, Minn., the Mississippi River rose slowly and became stationary at 14.7 feet, 0.7 foot above the danger-line, on the 4th, without causing serious damage.

During the 4th the river fell slowly at Louisville, Ky. Floods occurred in Vermont, New Hampshire, and Connecticut. Swollen streams were reported throughout eastern New York. Damage by flood was reported in eastern Tennessee and northern Alabama. Rivers and streams in Ohio were reported falling. On the 6th the Connecticut River at Hartford was the highest, 24.5 feet, since 1878. High water in the Alabama River flooded bottom lands about Montgomery, Ala. The Red River of the North was falling slowly at Saint Vincent, Minn.

On the 7th no change had occurred in the stage of the Mississippi River at Saint Paul, Minn., since the 4th. At Cairo, Ill., the river reached a stage of 49.1 feet at 8 a. m., flooding the tracks of the Iron Mountain Railroad at Birds Point, and submerging the Cotton Belt Road for a distance of 5 miles out of the city. At Cincinnati the Ohio River reached 51 feet, a rise of 2.1 feet in 24 hours, after which it began to fall. The Red River of the North continued to fall slowly. The Mississippi River passed the danger-line at Dubuque, Iowa, on the 8th. Overflow from the Mississippi and Ohio rivers inundated large areas of wheat land about Cairo, Ill., on the 10th. A crevasse 200 feet in width occurred in the levee  $1\frac{1}{2}$  mile below Lakeport, Ark., about 4 a. m. of the 11th.

Melting snow swelled the Columbia and Snake rivers and tributaries in Idaho and the north Pacific coast states. On the 12th the Mississippi River was stationary at 16.7 feet, 0.7 of a foot above the danger-line, at Dubuque, Iowa. The Mississippi reached the danger-line at Keokuk, Iowa. On the 13th the Mississippi River continued to rise slowly at Keokuk, Iowa. The Lakeport (Ark.) crevasse had widened to 500 feet and a large tract of cotton land was flooded. About 6 a. m. of the 14th a crevasse about 200 feet in width occurred in the levee at Brooks Mill, Chicot County, Ark. A break about 50 feet in width occurred on Bayou Lafourche, near Lafourche Crossing, at 3 a. m. On the 15th a crevasse occurred at Grand Lake, Ark. A third crevasse was reported in Chicot County, in the Matthews Bend levee. The break at Brooks Mill was enlarging rapidly.

On the 17th another crevasse occurred in the Mississippi levee above Grand Lake in Chicot County, Ark. The levees in Louisiana and Mississippi were reported in excellent

condition. Freshets were reported in the Kennebec River, Maine. A report from Cleveland, Ohio, stated that the Cuyahoga River rose rapidly, inundating low-lying sections, carrying away vast quantities of lumber, destroying houses and railroad tracks, and drowning 6 persons and a quantity of stock. Rivers of the north Pacific coast states were reported rising rapidly. On the 18th and 19th floods were reported in the streams of Washington and Oregon. On the 21st the river fell below the danger-line at Keokuk, Iowa. At Cairo, Ill., the Ohio River was falling rapidly.

On the 23d a break occurred in the levee on Bayou Lafourche, 4 miles below Lafourche Crossing. A break 500 feet in width occurred in East Carroll Parish, near Lake Providence. On the 24th the crevasse near Lake Providence was 1,200 feet in width and widening rapidly. On the 29th a break occurred in the levee at Amos Bayou, about 14 miles above Arkansas City, on the Arkansas side of the Mississippi River. At the close of the month large portions of East Carroll and Madison parishes, La., were submerged.

#### STAGE OF WATER IN RIVERS.

The following table shows the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence; and the monthly ranges:

*Heights of rivers above low-water mark, May, 1893.*

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Height.	Date.	Height.	Date.	
<i>Red River.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>
Shreveport, La. ....	29.2	24.0	23, 24	14.3	1	9.7
<i>Arkansas River.</i>						
Fort Smith, Ark. ....	22.0	26.8	1	5.0	27	21.8
Little Rock, Ark. ....	23.0	25.2	3	9.5	27	15.7
<i>Missouri River.</i>						
Fort Buford, N. Dak. * ..	25.0	13.3	25	7.9	4-6	5.4
Bismarck, N. Dak. ....	75.0	8.6	27, 28	2.4	7	6.2
Pierre, S. Dak. ....	13.0	4.0	31	0.2	14, 15	3.8
Sioux City, Iowa. ....	18.7	11.9	29	7.9	22	4.0
Omaha, Nebr. ....	18.0	11.1	30, 31	7.9	21, 22, 24, 25	3.2
Kansas City, Mo. ....	21.0	13.4	31	8.7	23, 24	4.7
<i>Mississippi River.</i>						
Saint Paul, Minn. ....	14.0	14.7	5-7	9.7	24, 25	5.0
La Crosse, Wis. ....	10.0	11.9	9	9.7	27-29	2.2
Dubuque, Iowa. ....	16.0	16.7	11-14	12.9	31	3.8
Davenport, Iowa. ....	15.0	13.6	14	10.7	31	2.9
Keokuk, Iowa. ....	14.0	14.9	15	12.2	31	2.7
Hannibal, Mo. ....	17.0	16.6	28	14.5	31	2.3
Saint Louis, Mo. ....	30.0	31.5	3	22.4	24, 25	9.1
Cairo, Ill. ....	40.0	49.3	9-13	34.3	26	15.0
Memphis, Tenn. ....	33.0	35.2	15-17	31.0	30, 31	4.2
Vicksburg, Miss. ....	41.0	48.3	22, 23	41.4	1	6.9
New Orleans, La. ....	13.0	16.1	31	13.3	1	2.8
<i>Ohio River.</i>						
Parkersburg, W. Va. ....	38.0	31.0	20	8.0	31	23.0
Cincinnati, Ohio. ....	45.0	51.0	7	19.9	31	31.1
Louisville, Ky. ....	24.0	27.4	3	7.8	31	19.6
<i>Cumberland River.</i>						
Nashville, Tenn. ....	40.0	20.2	9	6.5	28	13.7
<i>Tennessee River.</i>						
Chattanooga, Tenn. ....	33.0	30.0	7	4.6	28	25.4
<i>Monongahela River.</i>						
Pittsburg, Pa. ....	22.0	19.8	18	4.5	31	15.3
<i>Savannah River.</i>						
Augusta, Ga. ....	32.6	12.4	5	6.1	29	6.3
<i>Willamette River.</i>						
Portland, Oregon. ....	15.0	21.0	22	9.8	1	11.2
<i>Susquehanna River.</i>						
Harrisburg, Pa. ....	17.0	16.5	6	3.7	31	12.8
<i>Alabama River.</i>						
Montgomery, Ala. ....	48.0	24.9	6	3.3	28, 29	21.6
<i>James River.</i>						
Lynchburg, Va. ....	18.0	14.0	4	1.4	23, 26-28	12.6
<i>Des Moines River.</i>						
Des Moines, Iowa. ....	19.0	10.6	12	6.0	29-31	4.6
<i>Sacramento River.</i>						
Red Bluff, Cal. ....	22.0	8.5	17	4.9	30, 31	3.6
Sacramento, Cal. ....	25.0	24.8	16-18	22.8	31	2.0

#### ATMOSPHERIC ELECTRICITY.

##### THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky

Mountains they were reported in the greatest number of states, 29, on the 23d and 27th; in 26 on the 1st and 28th; in 20 to 25 on the 6th, 21st, 26th, 29th, 30th, and 31st; in 15 to 19 on the 2d, 3d, 4th, 11th, 13th, 14th, 15th, 20th, and 24th; in 10